TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
FP04-0275-00		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2004/012650	01.09.2004	10.09.2003

International Patent Classification (IPC) or national classification and IPC

C07D209/42

Applicant

EISAI CO., LTD.

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☐ *(sent to the applicant and to the International Bureau)* a total of _____ sheets, as follows:

      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2004/012650

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (Rule 12.3 and 23.1(b))

☐ publication of the international application (Rule 12.4)

☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ the international application as originally filed/furnished

☐ the description:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the claims:

nos. _____ as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* _____ received by this Authority on _____

nos.* _____ received by this Authority on _____

☐ the drawings:

sheets _____ as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2004/012650

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-3	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-3	NO
Industrial applicability (IA)	Claims	1-3	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Document 1: WO 00/50395 A1 (Eisai Co., Ltd.), 31 August 2000

Document 2: JP 9-316053 A (Eisai Co., Ltd.), 09 December 1997

Document 3: Nippon Kagaku Gakkai ed., Jikken Kagaku Koza 2 Kiso Gijutsu II, 3rd ed., 2nd printing, 10 December 1967, Maruzen Kabushiki Kaisha pub., page 81

Document 4: WO 02/59092 A1 (Maeck Patent GmbH), 01 August 2002

[1] The inventions set forth in claims 1 and 3 do not involve an inventive step in the light of documents 1 and 2, which are cited in the international search report, and document 3, which is newly cited.

Document 1 discloses a method for the production of the sulfonamide group-containing indole derivatives that are represented by formula (5a), wherein an aminoindole derivative that is represented by formula (3a) is reacted with a sulfonyl chloride derivative that is represented by the formula A-SO_2Cl in the presence of a base within a tetrahydrofuran solvent (refer to document 1, pages 25 to 32); however, the method in question is different from

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

the methods that are set forth in claims 1 and 3, wherein the reaction solvent is a mixed solvent that comprises water and an alkyl acetate ester.

Meanwhile, document 2 discloses a method wherein an aminoindole derivative and a sulfonyl chloride derivative are reacted in the presence of water and an alkyl acetate ester (refer to column 9, line 23 to column 10, line 18), and thus it would have been easy for a person skilled in the art to conceive of attempting to modify the reaction method that is disclosed in document 1 so that the tetrahydrofuran solvent, which is a solvent that tends to generate peroxides (if necessary, refer to the section pertaining to ethers on page 81 of document 3), is substituted with a different solvent that is used in similar reactions.

In addition, it would also have been easy for a person skilled in the art to attempt to discover an optimal reaction solvent and to optimize the reaction conditions by means of experimentation, and the effects exhibited by the production methods that are set forth in claims 1 and 3 are considered to have been predictable.

[2] The invention set forth in claim 2 does not involve an inventive step in the light of documents 1 to 3 and newly cited document 4.

Refer to section [1], above.

Document 1 discloses a method for obtaining the aminoindole derivatives that are represented by formula (3a), wherein a nitroindole derivative that is represented by formula (1a) is reacted with a phosphorus oxyhalide within a dimethylformamide solvent, the product is isolated and then a hydroxylamine hydrochloride is

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

added to the product and reacted therewith in order to produce a cyanated compound that is represented by formula (2a), whereafter the cyanated compound that is represented by formula (2a) is subjected to a reduction reaction (refer to document 1, pages 7, 15 and 17); however, the method in question is different from the method that is set forth in claim 2, wherein the formylation reaction and the cyanation reaction are carried out in a one-pot process.

Meanwhile, document 4 discloses a feature wherein an indole derivative is reacted with a phosphorus oxyhalide within a dimethylformamide solvent, a hydroxylamine hydrochloride is added to the product and reacted therewith, and then the product is subjected to a cyanation reaction; therein, document 4 further indicates that said formylation reaction and said cyanation reaction can be carried out in a one-pot process (refer to pages 6 to 7 and 23 to 24). Consequently, it would have been easy for a person skilled in the art to attempt to employ the feature that is disclosed in document 4 in the reaction method that is disclosed in document 1 in order to simplify the steps thereof.

Furthermore, the effects exhibited by the production method that is set forth in claim 2 are considered to have been predictable.